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ABSTRACT

This study examined the external impacts and monitoring patterns of student assessment information on institutions, based on institutional type and control in seven areas: student applications or acceptance rates, allocation or share of state funding, evaluations from regional accrediting agency, private fund-raising results, success on grant applications, communications with external constituents, and institutional reputation or image. It also examines how the external influences on, institutional approaches to, institution-wide support for, and assessment management policies and practices designed to promote the use of student assessment information influence institutional monitoring of that information. Using discriminant analysis the study identifies conceptual domains and variables that discriminate between institutions that monitor external impacts of student assessment and those that do not. It was found that fewer than 30 percent of institutions monitor external impacts--an exception being evaluation by regional accrediting agencies, which is considered by more than 50 percent of institutions. Some differences also were seen based on institutional type, student application or acceptance rates, allocation or share of state funding, and private fund-raising results, as well as on institutional control. (Contains 40 references.) (CH)

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# A Study of the Institutional Factors Influencing the External Impacts of Student Assessment Information

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# A Study of the Institutional Factors Influencing the External Impacts of Student Assessment Information

Abstract

This study examines the external impacts and monitoring patterns of student assessment information on institutions based on institutional type and control in seven areas: student applications or acceptance rates, allocation or share of state funding, evaluation from regional accrediting agency, private fund-raising results, success on grant applications, communications with external constituents, and institutional reputation or image. It also examines how the external influences on, institutional approach to, institution-wide support for, and assessment management policies and practices designed to promote the use of student assessment information influence institutional monitoring of the external impacts of that information. Using discriminant analysis, the authors identify several conceptual domains and variables that can be used to discriminate between institutions that monitor the external impacts of student assessment information and those that do not.

# A Study of the Institutional Factors Influencing the External Impacts of Student Assessment Information

## Problem and Research Question

The issue of assessing student outcomes in higher education is of current interest in both education and government circles. The past few decades have seen increases in the demand for accountability in higher education, especially in public higher education. With this demand for accountability has come a greater scrutiny of how faculty and administrators assess the effectiveness of their respective institutions. This trend is not new (Peterson, Einarson, Trice, & Nichols, 1997). Typically, the field of higher education has seen a call for greater accountability and better assessment after periods of substantial growth. In this century, the periods from 1918-1928 and from 1952-1975 saw two periods of such expansion in higher education. Following each of these expansions were calls for increased assessment. In the earlier period concerns about coherence and substance in the curriculum spurred reform movements using "comprehensive testing" to assess college learning (Resnick & Goulden, 1987). As higher education experienced expansion in the 1950s and 1960s, much of which was brought on first by the GI Bill and then by attempts to increase access to higher education, the concern over quality resurfaced (Cameron & Whetton, 1996). One of the leading arguments against expanding access to higher education was that the result would inevitably decrease quality. Proponents of this argument felt that we could only increase access if we decreased admission standards. Opponents argue, however, that much of what limits access is the high cost of postsecondary education, which leads to another reason for the increase in accountability and assessment; the drastic rise in tuition dollars over the past two decades. The economic pressures that emerged in

the 1970s and 1980s put strains on institutional, state, and federal budgets, and led to public scrutiny over the use of tax dollars in higher education. These concerns triggered a greater interest in the accountability of higher education (Aper, 1993; Ewell, 1997).

There are a number of reasons why assessment has reemerged as a critical topic in recent years. Aside from the strong political support from state officials who want to know where state funds are going and what they are buying, there has been a need to ensure that our local, regional, and state economies have a well trained workforce to meet the increasingly competitive challenges of a worldwide market (Rossmann & El-Khawas, 1987). Additionally, from higher education institutions, there has been a move toward improving instruction and curriculum, which has developed as a response to the reports that conclude higher education is not as effective as it could be (Erwin, 1991). Peter Ewell (1991) notes that the current movement in higher education has been prompted by a partnership between reform and accountability; "a partnership yielding a complex and diverse collection of assessment activities in university settings" (Riggs & Worthley, 1992). The net effect is that assessment is here to stay and many states and most institutions have initiated policies and programs to address the continuing concerns surrounding student outcomes (Peterson, Einarson, Augustine, & Vaughan, 1999).

This recent fervor over outcomes assessment has lead to an ongoing national dialogue surrounding the issues of accountability and quality. Over the past decade, assessment and improvement of student performance has become the focus of much discussion and many efforts both within and external to colleges and universities. During that time there has been a progressive increase in the number of postsecondary institutions engaged in some form of student assessment (El-Khawas, 1990, 1995). To date, however, there has been little systematic examination of the external influences and demands for student assessment, the internal efforts'

and support for student assessment, and the uses and impacts of data from student assessment. One such study, the National Center for Postsecondary Improvement (NCPI) Research Project 5.2 on "Institutional Support for Student Assessment" (ISSA) helped address this gap by examining the external influences on, institutional approaches to, institution-wide support for, management policies and practices of, and the uses and impacts of information from student assessment.

Given the external sources for much of the demand for student assessment and accountability, one might expect that institutions would be interested in the impact that their student assessment efforts and information was having on certain external constituents. Several such impacts often referenced in the literature include the effect on: student applications, the institution's share of state funding, the institution's evaluation of regional accrediting agencies, private fund raising, the success of grant applications, communications with external constituents, and the institution's reputation or image (Peterson et al, 1997). This association between institutional involvement in student assessment and the relationships with the external environment has received little consideration. The two areas most commonly referred to are state funding and accreditation (Banta, Lund, Black, & Oblander, 1996). No systematic empirical examinations of the relationship between institutional assessment efforts and external impacts has been located in the literature. One particular component of the NCPI study is the examination of whether institutions monitor the impacts derived from external sources, which are related to their student assessment practices, and if so, what characteristics distinguish those institutions from institutions that do not monitor these impacts. This is the basis for the research question to be addressed in this paper: what are the characteristic factors that distinguish

institutions that monitor external impacts of student assessment information from those institutions that do not monitor the external impacts?

## Review of the Literature

Prior to the collection of data for this study, an extensive literature review was completed on institutional support for student assessment (Peterson, Einarson, Trice, & Nichols, 1997). A total of 250 documents, most of which were descriptive or prescriptive in nature, were part of the initial review. Six distinct domains emerged from the literature: external influences on student assessment, institutional approaches to student assessment, institution-wide support for student assessment, assessment management policies and practices, institutional context, and institutional uses and impacts of student assessment. This study examines the influence of the first five of these domains on the external impacts of student assessment information.

Additionally, several dimensions were identified within each domain. Of concern in this study are the following: accreditation and state influences (within the external influence domain); assessment content, assessment methods, and assessment studies (within institutional approaches domain); institutional support strategy, leadership and governance patterns, and evaluation of student assessment process (within institution-wide support domain); resource allocation, budget decisions, computer support, access to information, distribution of reports, student involvement, professional development, faculty evaluation, and academic planning and review (within assessment management policies and practices domain); institutional type and control (within institutional context domain); and external impacts (within the institutional uses and impacts domain). These dimensions will be discussed later in the variables section of the paper.

Nature of External Impacts of Student Assessment Information

While there has been little consideration given to the external impacts of student assessment information, there are a number of areas cited in the literature that describe ways in which assessment information may be used for purpose external to the institution. The two most commonly cited uses of student assessment information is to respond to state and/or regional accrediting association reporting requirements (Banta et al., 1996; Banta & Moffett, 1987; Cowart, 1990; El-Khawas, 1989; Ory & Parker, 1989; Williford & Moden, 1993). El-Khawas (1995) reported in Campus Trends that 50% of the institutions she surveyed reported that student assessment was required by their state, 84% were required by their regional accrediting associations to include assessment in their self-studies, and 78% reported that specialized accrediting agencies required assessment to be included in their self-study.

Banta et al. (1996) also cited that some institutions reported the use of assessment information in communications with local business and community leaders, other educational institutions, prospective parents and students, high school counselors, and potential donors. Depending on the audience, this use of assessment information may be intended to bolster the institutional image, illustrate public accountability, or create public awareness of institutional programs, services, or other related benefits (Banta & Moffett, 1987; Jacobi, Astin, & Ayala, 1987).

Institutional involvement in student assessment has been shown to provide some external impacts. There are a few institutions that have reported increases in institutional reputation or image as a result of their assessment activities and reported results (Young & Knight, 1993; Williford & Moden, 1993), increases in the number and academic potential of student applicants,

the receipt of awards associated with program excellence and academic challenge (Williford & Moden, 1993), and the allocation of state funding (McClain, Krueger, & Taylor, 1986).

Apart from these few studies, very little attention has been given to the external impacts of assessment information on institutions. The two multi-institutional studies conducted in this area ( Cowart, 1990; El Khawas, 1989) found that student assessment information was most likely to be used internally rather that externally. The literature found no research that examined the relationship between student assessment information and its external impacts (Peterson et al, 1997).

External Influences

There are several areas that warrant consideration when examining external influences on student assessment; the federal government, state government, and regional accreditation associations being the most obvious. At the federal level, a number of reports, guidelines, goals, and regulations played key roles in promoting the current assessment environment (Peterson et al, 1997). Few empirical studies, however, have been undertaken to show the relationship between institutional assessment efforts and these federal initiatives. One area that has been studied in which the federal government did influence assessment is with the regional accrediting agencies. Muffo (1992) found that as a result of the stipulation from the U.S. Department of Education's Criteria for Recognition, which states that accrediting agencies must require institutions to conduct student assessment, all six regional accrediting agencies now require the assessment of student outcomes. Additional federal influence was suggested by means of federal financial incentives (e.g. FIPSE, NSF) and several studies on assessment were funded with federal grants (Cook, 1989; Banta, 1991; Katz, 1993).

At the state level, the research by Cole, Nettles, and Sharp (1997) conducted from the National Center for Postsecondary Improvement, revealed that all but four of fifty responding states had reported some type of student assessment activity. Furthermore, wide variations in the approaches used by states have been documented throughout the literature. There are eight dimension, however, along which state assessment approaches can be compared (Peterson et al, 1997). Four of these dimension are particularly interesting in examining the relationship of state influence to external impacts: state governance structure or authority (McGuiness, Epper, & Arredondo, 1994), types of state initiatives to student assessment (Cole et al, 1997; Sims, 1992), state purposes for assessment (Aper et al, 1990; Cole et al, 1997; McGuiness, 1994), and state approaches to student assessment (Aper et al, 1990; Banta & Moffett, 1987).

The role of the accreditation associations has received less attention in the literature than state agents (Peterson et al, 1999). Still, these associations, particularly the regional accrediting associations appear to have a significant influence on the assessment efforts of institutions (Aper et al, 1990; Banta, 1993; Ewell, 1993). As discussed earlier, all six regional accrediting agencies now require student outcomes assessment as part of their institutional accreditation.

Institutional Context

The literature suggests that there may be distinct differences in the types of assessment initiatives and practices used by institutions based on institutional context. These differences have been found in the varying methods and approaches used by institutions and differ according to institutional type (Johnson, Prus, Anderson, & El Khawas, 1991; Steele & Lutz, 1995). Other studies have found that differences emerge in areas of organizational and administrative support for student assessment based on institutional type (Patton, Dasher-Alston, Rateray, & Kait, 1996)

and control (Johnson et al, 1991). These studies suggest the need to use institutional type and control when performing studies on student assessment impacts.

Institutional Approaches

Peterson et al (1999) identify institutional approach to student assessment as the content, timing, level of aggregation at which assessment occurs, and types of assessment measures used. The first of these, content, is identified in the literature using several taxonomies for classifying students' performance or functioning (Astin, 1991; Bowen, 1977; Alexander & Stark, 1986; Ewell, 1984). Although these classifications use different terminology, all differentiate between various aspects of students' cognitive (higher order processes, subject matter knowledge, etc.), affective (values, attitudes, satisfaction, etc.), and behavioral (course completion, hours spent studying, etc.) functioning (Peterson & Einarson, 1998).

Timing refers to when and how often institutions choose to assess student outcomes. The literature identifies several stages at which institutions may collect student assessment information: prior to or at initial enrollment, during various points of enrollment, or near or after graduation, or any combination of these (Astin, 1991; Terenzini; 1989). Multiple point assessment is thought to have the greatest potential for impacting student and institutional performance (Astin, 1991; Jacobi et al, 1987).

A third dimension of student assessment approaches is the level of aggregation to which the analysis or approach is oriented (Terenzini, 1989). There are a number of levels or units of analysis that an institution may choose to examine. They may use student assessment to study the performance of individual students, student subgroups, academic units or programs, schools or divisions or the entire institution (Alexander & Stark; 1986; Astin, 1991).

The fourth dimension examines the types of measures used in the assessment of student outcomes. This dimension includes not only the types of instruments used such as traditional pencil and paper tests or non-traditional portfolio analysis, but also includes whether the measures were developed internally or externally (Johnson, McCormick, Prus, & Rogers, 1993; Ory, 1991) or whether they are standardized across states or individual to the institution.

These four dimensions would seem to be critical in examining the relationship between the student assessment approaches and the support for or uses of student assessment information, yet no research was found that used these dimensions to study the relationships.

Institution-wide Support

The literature discusses three dimensions of institution-wide support for student assessment: institutional support strategy, leadership and governance patterns, and the evaluation of the student assessment process (Peterson & Einarson, 1998). Institutional support strategy refers to the incorporation of assessment language and efforts into the mission, purpose, structure and function of the institution. Two distinct categories have been identified in the discussion of institutional support strategies : those that reflect an external focus, and those with an internal focus. Externally focused assessment support strategies underscore the adherence to external mandates such as state-level or accreditation requirements (Aper et al, 1990; Wolff & Harris, 1995). Internally focused assessment support strategies (Braskamp, 1991) emphasize institutional improvement efforts.

The second dimension discussed in the literature is leadership and governance patterns. Leadership patterns refer to the critical role played by academic leadership in supporting the institutional efforts of assessment (Banta et al, 1996; Braskamp, 1991). This may take the form

of patterns of leadership participation, forms of support, or leadership styles. Banta (1993) has also suggested the importance of gaining formal and informal faculty and staff support.

Governance patterns refer to the structures and processes used in institutional student assessment efforts (Peterson et al, 1999). These may vary from who and/or how many oversee the assessment process to the degree to which the authority for decision making is centralized or decentralized (Banta et al, 1996). Johnson et al (1991) examined the structures that institutions implement for student assessment. They found that executive responsibility was most often situated in the academic division of an institution, the operational responsibility was usually given to an administrator rather than faculty member, and that a minority of institutions had actually created separate offices for student assessment.

The third dimension found in the literature is an evaluation component of the institution's assessment process. According to Wolff (1992), when student assessment is approached as a constantly evolving process, it can contribute to the improvement of student and institutional performance. For this process to work, it needs to be evaluated on a regular basis. According to Patton et al (1996), few institutions evaluate their student assessment process and activities. There is little evidence in the literature, however, to support a relationship between student assessment evaluation and its impacts.

Assessment Management Policies and Practices

The final domain found in the literature discusses institution's assessment management policies and practices. This refers to the extent to which the assessment process is translated into various institutional policies and become routine practice. This process is seen as critical in sustaining the effectiveness of the assessment process (Ewell, 1988). The literature describes a number of practices that are recommended as institutions develop and implement their student

assessment program. These include: access to and distribution of reports (Patton et al, 1996), use in faculty evaluation to promote faculty involvement (Ewell, 1984; Ryan, 1993), professional development in assessment (Banta et al, 1996; Young & Knight, 1993), the involvement of students (Duvall, 1994) and administrators from student affairs (Erwin, 1991), and the use of assessment data in academic planning and review (Ewell, 1988).

Only one study was located that addressed the relationship of assessment management practices and policies to external influences or to an institution's assessment approaches, and internal support. This study found that institutional practices regarding the assessment reports was predictive of achieving positive outcomes for student assessment projects, but that using resource allocations was not (CSUITL, 1993). No other literature on this relationship was located.

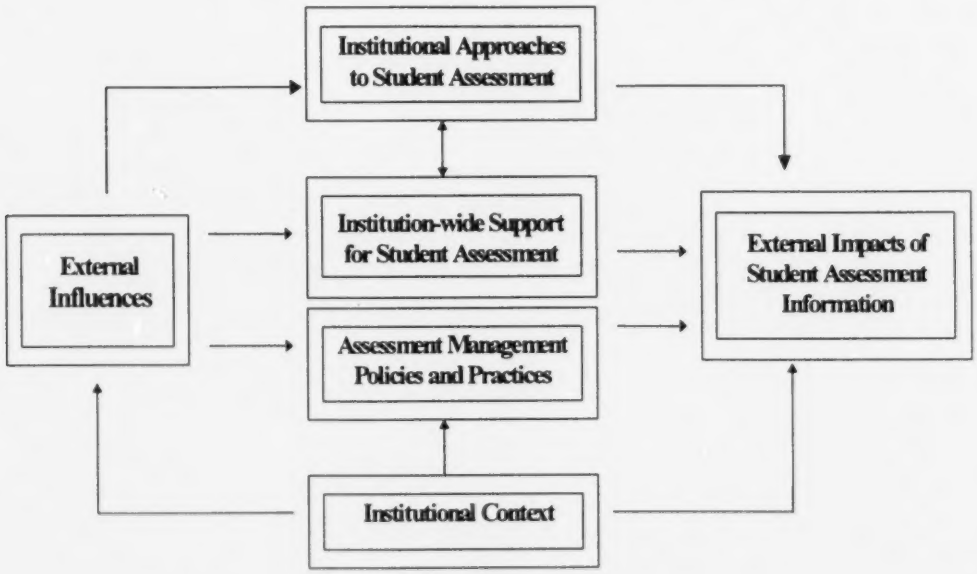
## Conceptual Framework

Based on the literature review, a conceptual framework of institutional factors influencing external impacts was developed and is comprised of six domains: external influences, institutional context, institutional approaches to student assessment, institution-wide support for student assessment, assessment management policies and practices, and external impacts of student assessment information. The framework is displayed in Figure 1.

Research Questions

The purpose of this study was to examine the influence of the five specific domains identified in the conceptual framework on the domain representing the external impacts of student assessment information. The five domains are external influences on student assessment, institutional approaches to student assessment, institution-wide support for student assessment, management policies and practices for student assessment, and institutional context.

**Figure 1.** Conceptual Framework for Institutional Factors Influencing External Impacts of Student Assessment Information


Institutional Approaches to Student Assessment
Institution-wide Support for Student Assessment
Assessment Management Policies and Practices
External Influences
External Impacts of Student Assessment Information
Institutional Context

Additionally, we were interested in identifying any differences among and between institutions that might be used to identify whether or not these institutions were monitoring the external impacts of their assessment information. The research questions addressed in this study were:

1. What types of external impacts of student assessment information do institutions monitor? Do these vary by institutional type? Do these vary by institutional control?
2. How do institutions' external influences on, institutional approaches to, institution-wide support for, and patterns of assessment management policies and practices for student assessment relate to the external impacts of student assessment information they monitor? Does this vary by institutional type?

These questions were the starting point for this study. Based on the literature review, the conceptual framework, and the research questions, we were able to identify a number of variables that we used in this study. These are described in the next section.

Variables

Each of the variables used in this study is listed below and the variable names are italicized for easy identification. The operational definitions of the variables can be found in Appendix A.

External Influences. The variables in this domain include *accreditation influence,* which captures the influence from regional accrediting agencies, and *state initiative, state approach,* and *state authority,* which capture the influence of the state in which the institution resides.

Institutional Context. This domain contains only two variables for this study, *institutional type,* (divided into five collapsed Carnegie types: associate of arts, baccalaureate, comprehensive, doctoral, and research) and *institutional control* (public or private). Since the variables in discriminant analysis should be continuous (or in the case of *institutional type*, can be forced continuous) *institutional control* is not used in the discriminant analysis. It should be noted, however, that there are differences by *institutional control* for three of the external impacts. For the second external impact, allocation or share of state funding, the difference in monitoring by control is expected since private institutions generally receive no stato funding. Because of this, private institutions were removed from the analysis of the second external impact, allocation or share of state funding, during our examination by *institutional type*. (See result's section for tables and a more detailed discussion.)

Institutional Approach to Student Assessment. Institutional approaches to student assessment are measured by the extent to which they collect data on students' *academic intentions* and in the areas of students' *cognitive assessment, affective assessment*, and *post-*

*college assessment*. Furthermore, an additive index was created to capture the *comprehensiveness of data collection* in these various areas. In measuring the various methods used by institutions, three variables are used to capture institutional approaches, *number of instruments,* (the number of inventories or comprehensive tests used), *student methods* (integrative and performance based methods), and *external methods* (methods developed outside the institution or performed using external constituents). The final two variables in this domain, *number of studies* and *number of reports* capture the quantifiable analysis of the assessment approach by aggregating the total number of assessment studies conducted and the number of levels at which the data is reported, respectively.

Institution-wide Support for Student Assessment. Seven variables represent the domain of institution-wide assessment support. The *mission emphasis* examines whether or not the institution includes within its mission any mention or emphasis on undergraduate assessment. *Internal purposes* evaluates the importance of internal reasons for engaging in student assessment. Likewise, *accreditation purposes,* and *state purposes* measure the importance of accreditation standards and state requirements in the institutions' assessment efforts. The type and amount of *administrative and faculty support* are captured in this variable, and the number and level of individuals involved in the institutions' assessment group are captured by the *breadth of assessment planning group.* The final variable in this domain, *number approving changes,* identifies the number of individuals needed to change the assessment plan or process.

Assessment Management Policies and Practices. Ten variables were developed relating to management policies and practices, seven of these were used in the analysis for this study: *access to information* measures the breadth of internal access to assessment reports; *distribution of reports* measures the breadth of report distribution in the institution; the extent to which

institutions use policies that promote *student involvement* in the assessment process; the use of *professional development* policies or practices to involve faculty and administrators in assessment; the use of professional development policies for administrators in *student affairs*; the use of student assessment data in the *academic planning and review* process; and the use of policies or practices tying *faculty evaluation* to the use of assessment information or involvement.

As in the last domain, there were other variables developed in the larger study of institutional assessment. Due to the nature of this smaller study and the restrictions of the analytical method used, the other variables were not incorporated and were left unidentified to eliminate any confusion.

External Impacts. Seven possible dimensions were described in the literature relating to external impacts of student assessment information. These include: *student application or acceptance rates, allocation or share of state funding, evaluation from regional accrediting agency, private fund-raising results, success on grant applications, communications with external constituents,* and *institutional reputation or image.* These seven dimensions were measured by the extent to which an institution monitored the influence of student assessment data on these areas.

## Method

### Survey Design

This study is part of Project Five of the National Center for Postsecondary Improvement (NCPI). NCPI is a national research project funded by a grant from the Office of Educational Research and Improvement (OERI) of the U.S. Department of Education. The data used in this study were collected from a survey that was developed out of the literature review and during the

second phase of the four phase project. The design of the instrument used two approaches: the identification of dynamics, policies and practices reported in the literature, and the the use of instruments used in other surveys of student assessment. The instrument was designed based on these sources. The instrument, "Inventory of Institutional Support for Student Assessment" was piloted and refined using chief academic officers in four types of institutions (associate of arts, baccalaureate, comprehensive, and research). The survey is a comprehensive inventory of external influences of student assessment, institutional approaches to student assessment, organizational and administrative support for student assessment, and institutional uses and impacts of student assessment information.

Population

The survey was sent in January of 1998 to the chief academic officers of all 2,524 two-year and four-year institutions (not including specialized or proprietary institutions) recognized by the U.S. Department of Education who offer undergraduate programs at the associate of arts or baccalaureate level. The administrators were asked to forward the survey to the person or persons most familiar with undergraduate student assessment at the institution. We received 1,393 completed surveys for a response rate of 55 percent. The response rate by *institutional type* varied from 53% for baccalaureate institutions to 65% for research institutions.

Of the 1393 institutions that responded, a large number did not respond to the specific items to be used as the grouping variable in the discriminant analysis. Therefore 221 institutions were eliminated in order to satisfy the statistical requirement of the analysis. This left a total of 1172 institutions in the final analysis.

Data Collection

The data collection process included five steps. First, two weeks prior to sending the survey, a letter was sent to the chief academic officers to inform them of the nature and importance of the national study and to let them know that the survey would be arriving shortly. Second, the survey was then sent to the same administrator with an attached cover letter that discussed its intended use and directions for completing and returning it. Third, a week after the survey was sent, a follow-up post card was mailed to remind the administrator of the importance of completing and returning the survey. Fourth, approximately a month after the survey was sent, all non-responding institutions received a phone call encouraging them to respond and offering to answer any questions. Finally, a second mailing of the survey was sent to all non-responding institutions.

As the returned surveys were received, they were recorded, reviewed for accuracy of responses, and checked to see if the IPEDS identifier was still attached. This would allow us to merge institutional characteristics from the national IPEDS database with our survey data. The surveys were then sent to a commercial data entry firm for computerized entry of the data. All entries were double verified and a complete computer disk was transferred to the research team. The team then performed a random check of computerized data against surveys and found no errors. The final step was to merge the computerized survey data with the IPEDS database. During the analysis (discussed in the next section), a set of derived indices and factor variables would be added to the database.

Analysis

The data were first analyzed using several traditional methods including descriptive analysis and frequency distributions. Means and standard deviations for all survey items were

reviewed to identify any inconsistencies among similar items or items for which there was little or no variation. The researchers used factor analysis to create indices for items thought to be related to common dimensions of the conceptual framework. Each factor analysis was rotated using the oblique option and items were included if they met three criteria: 1) were weighted most heavily on that factor, 2) had a loading exceeding .40, or 3) were conceptually similar in content to other items in the factor. Any items that did not load heavily were retained as individual items. Additionally, additive indices were created for items not subjected to factor analysis. This data reduction helped to reduce the overall number of variables and gave us a mix of individual items, factor indices, and additive indices

The initial plan was to run multivariate regression analysis using items and indices to examine the relationships between and the influences of the five domains on the external impacts of institutions. However, it was determined that the proposed dependent variable (external impacts) was not continuous and therefore could not be used as an outcome measure in regression analysis. The researchers then decided to use discriminant analysis to identify any variables which might be used to discriminate between institutions that do monitor external impacts and those that do not.

In order to facilitate the discriminant analysis, the researchers first recoded the seven items included as external impact variables. These were initially coded as follows: 0= not monitor; 1= monitored, negative impact; 2= monitored, no known impact; 3= monitored, positive impact. After recoding the items were coded as 0= did not monitor external impacts; 1= monitored external impacts. This created a dichotomous variable to be used in the discriminant analysis.

Since discriminant analysis is a listwise procedure (requires all cases to have full data on every item) and since we were missing data on a number of items for various cases, we needed to replace the missing data or eliminate the case. We used mean replacement for those variables with fewer than 10% of the cases missing data. For those with more than 10% missing we eliminated the variable from our analysis.

Stepwise discriminant analysis (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) were performed separately for each of the seven items in the external impacts domain. This allowed variables to enter the analysis until the variables remaining in the pool offered no significant increase in the discriminatory ability (significance of F to enter = .05).

Discriminant analysis results will provide n-1 discriminating functions; where n= number of group variables. In this study, since we are looking only at whether institutions monitor their external impacts or not, there are only two group variables. Therefore, each discriminant analysis only produced one discriminating function for each of the seven external impact items. The discriminant analysis with corresponding eigenvalues, Wilks' lambdas, group centroids, and standardized discriminant coefficients for each function are discussed in the results section.

The eigenvalue by itself tells us little. It becomes more useful in distinguishing the strength of the function with respect to other functions. In this study, since there are only two groups (institutions that monitor and institutions that do not monitor) and thus one function, the eigenvalue provides little indication of a functions relative strength. It is included, however, because we can draw some comparisons of the relative strength of discriminant functions for each of the seven external impact items. Similarly, the Wilks' lambda is a comparative measure and can be used to compare functions, but unlike the eigenvalue it does have meaning by itself.

Wilks' lambda ranges from 0 to 1 and the lower the number the better the relationship between the function and the group membership.

The group centroid is another means of distinguishing the function that discriminates best between those institutions that monitor external impacts and those that do not. The group centroid graphically defines each groups location along the functions continua between positive 1 and negative 1. In this study the positive number represents institutions that do monitor external impacts and the negative number represents institutions that do not monitor external impacts.

The standardized discriminant coefficients help us interpret the function. They represent the influence of their respective discriminating variables on the overall function. The absolute value of the coefficient indicates the importance of that variable in the interpretation of the function and the sign indicates its direction toward the positive or negative end of the continuum of interpretive statements. In this case a positive sign would indicate a variable's influence in the function toward differentiating an institution's likelihood *to monitor* its external impacts and a negative sign would indicate a variables influence in the function toward differentiating an institution's likelihood *not to monitor* its external impacts.

## Results

The descriptive results show a weak pattern of monitoring the external impacts of student assessment information. The discriminant analysis, however, has shown that there are a number of significant discriminating variables that can be used to differentiate between institutions which monitor external impacts of student assessment information and those that do not. Though each of the seven external impacts had a discriminant function with a number of discriminating variables–some were stronger than others–each had its own unique discriminating variables.

Furthermore, we were able to identify a number of discriminating variables that contributed across several of the external impacts. These discriminating variables provide dimensions that can be used to differentiate between institutions that monitor versus those that do not, for three or more external impacts. We will first discuss descriptive results, then the discriminant functions for each of the seven external impacts highlighting the variables that are relevant to each and finally the variables by conceptual domains that are related to several of the external impacts.

Descriptive Results

A review of the descriptive pattern of institutional monitoring of the external impacts of student assessment information addresses our first research question: What types of external impacts of student assessment information do institutions monitor? Do these vary by institutional type? by institutional control? Table 1 shows the monitoring patterns by *institutional type* and Table 2 shows the monitoring patterns by *institutional control*. The results of the overall pattern of monitoring are shown in the "Total" row of Table 1 and / or Table 2.

Overall Institutional Monitoring (Table 1, Total row) shows a low pattern of monitoring of all seven external impacts of student assessment information. With the exception of the external impact *evaluation from regional accrediting agency*, all of the impacts are monitored by less than one-third of the institutions. Monitoring of the external impact *private fund-raising results* was the lowest with only 15.9% of the institutions monitoring for this. The external impact on *evaluation from regional accrediting agency* was highest with 56.3% of the institutions monitoring this area. This may be some indication of the relative importance or influence of regional accrediting agencies in the collection of student assessment information. Monitoring for student assessment impacts on *institutional reputation or image* at 34.1% was the second highest, perhaps reflecting institution's concerns in this dimension.

**Table 1.** Monitoring Differences by Institutional Type. (N=1172)

| Institutional Type | External Impacts | | | | | | |
|---|---|---|---|---|---|---|---|
| | Student Application or Acceptance Rates | Allocation or Share of State Funding[1] | Evaluation from Regional Accrediting Agency | Private Fund-Raising Results | Success on Grant Applications | Communications with External Constituents | Institutional Reputation or Image |
| **Associate of Arts** | | | | | | | |
| Monitor | 16.6% | 22.4% | 54.0% | 11.0% | 26.0% | 24.6% | 33.2% |
| Do Not Monitor | 83.4% | 77.6% | 46.0% | 89.0% | 74.0% | 75.4% | 66.8% |
| **Baccalaureate** | | | | | | | |
| Monitor | 25.3% | 33.3% | 56.4% | 23.4% | 27.1% | 29.7% | 37.0% |
| Do Not Monitor | 74.7% | 66.7% | 43.6% | 76.6% | 72.9% | 70.3% | 63.0% |
| **Comprehensive** | | | | | | | |
| Monitor | 20.0% | 31.3% | 60.4% | 16.8% | 21.1% | 27.5% | 36.4% |
| Do Not Monitor | 80.0% | 68.9% | 39.6% | 83.2% | 78.9% | 72.5% | 63.6% |
| **Doctoral** | | | | | | | |
| Monitor | 14.0% | 32.5% | 61.4% | 15.8% | 19.3% | 26.3% | 24.6% |
| Do Not Monitor | 86.0% | 67.5% | 38.6% | 84.2% | 80.7% | 73.7% | 75.4% |
| **Research** | | | | | | | |
| Monitor | 19.4% | 37.8% | 51.6% | 17.7% | 16.1% | 32.3% | 27.4% |
| Do Not Monitor | 80.6% | 62.2% | 48.4% | 82.3% | 83.9% | 67.7% | 72.6% |
| **Total** | | | | | | | |
| Monitor | 19.5% | 26.3% | 56.3% | 15.9% | 24.2% | 27.0% | 34.1% |
| Do Not Monitor | 80.5% | 73.7% | 43.7% | 84.1% | 75.8% | 73.0% | 65.9% |
| **Chi-square** | **9.62*** | **10.32*** | 4.12 | **20.95***** | 6.58 | 3.37 | 5.41 |

Note 1: N=753 Public Institutions
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Monitoring by *Institutional type* (Table 1) shows a significant difference in the monitoring patterns among types of institutions for three of the external impacts: *student application or acceptance rates, allocation or share of state funding,* and *private fund-raising results*. For *student application or acceptance rates*, baccalaureate institutions were highest with 25.3% monitoring this impact versus a low 14% of doctoral institutions that monitor this impact. Others fell between these extremes. This difference may be attributed to the relative importance of student applications and acceptance rates for various institutional types, their emphasis on undergraduate education, or the competitiveness of their market segment.

**Table 2.** Monitoring Differences by Institutional Control. (N=1172)

| Institutional Control | External Impacts | | | | | | |
|---|---|---|---|---|---|---|---|
| | Student Application or Acceptance Rates | Allocation or Share of State Funding | Evaluation from Regional Accrediting Agency | Private Fund-Raising Results | Success on Grant Applications | Communications with External Constituents | Institutional Reputation or Image |
| **Public Institutions** | | | | | | | |
| Monitor | 19.0% | 26.3% | 58.0% | 13.8% | 24.2% | 28.7% | 36.4% |
| Do Not Monitor | 81.0% | 73.7% | 42.0% | 86.3% | 75.8% | 71.3% | 63.6% |
| **Private Institutions** | | | | | | | |
| Monitor | 20.3% | 5.5% | 53.2% | 19.6% | 24.3% | 23.9% | 30.1% |
| Do Not Monitor | 79.7% | 94.5% | 46.8% | 80.4% | 75.7% | 76.1% | 69.9% |
| **Total** | | | | | | | |
| Monitor | 19.5% | 18.9% | 56.3% | 15.9% | 24.2% | 27.0% | 34.1% |
| Do Not Monitor | 80.5% | 81.1% | 43.7% | 84.1% | 75.8% | 73.0% | 65.9% |
| **Chi-square** | .288 | **76.16*** ** | 2.53 | **6.69** ** | .004 | 3.17 | **4.77*** |

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

For the external impact of student assessment on *allocation or share of state funding*, research institutions monitored at a high rate of 37.8% versus a low of 22.4% for associate of arts institutions. While it is risky to speculate as to the reason for these differences, it might be that research institutions rely very heavily on additional state funding relative to tuition and fees whereas associate of arts institutions may rely less on state assistance and more on funds generated by tuition and fees and local taxes.

The differences in the monitoring rates for the external impact of student assessment on *private fund-raising results* can probably be attributed to the public / private control of institutions. The results show that a high of 23.4% of baccalaureate institutions monitor this external impact, versus a low of 11% of associate of arts institutions. The results of monitoring by *institutional control* (see the next section) show a significant difference in the monitoring practices of the same external impact, *private fund-raising results*, and that private institutions monitor this impact more that public institutions. Since a large number of private institutions are



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classified as baccalaureate, it makes sense that the monitoring of this external impact would not only be significantly different by *institutional control*, but also by *institutional type* (i.e. a high correlation between private institutions and baccalaureate institutions).

Monitoring by *Institutional control* (Table 2) shows a significant difference in the monitoring patterns between public and private institutions for three of the external impacts: *allocation or share of state funding, private fund-raising results,* and *institutional reputation or image*. Private institutions monitor the impact of student assessment on *allocation or share of state funding* less than public institutions (5.5% versus 26.3%). It is not surprising that this external impact is monitored differently by *institutional control* since private institutions generally receive limited funding from states. Correspondingly, private institutions monitor the external impacts of student assessment on *private fund-raising results* more than public institutions (19.6% versus 13.8%), most likely because they rely more heavily on private donations for their overall funding. Finally, and somewhat surprisingly, private institutions monitor the external impact on *institutional reputation or image* less than public institutions (30.1% versus 36.4%). This difference may be due to the general perception that private higher education is of a higher quality than public higher education and therefore, public institutions more closely monitor the external impacts of their student assessment information.

Discriminant Functions

As previously mentioned, we are only differentiating between two groups–institutions that monitor external impacts and those that do not. Discriminant analysis gives only one function for each impact. While discriminant analysis does not directly compare the relative strengths of different functions among the impacts, we can examine the relative strength by comparing each function against the others. This comparison is useful and can help us better understand the

external impacts by examining the differing patterns of variables that discriminate on each impact and the domains that contribute to the functions across all of the impacts. This analysis allows us to address our second research question, "How do institutions' external influences on, institutional approaches to, institution-wide support for, and patterns of assessment management policies and practices for student assessment relate to the external impacts of student assessment information they monitor?", for each of the seven external impacts and provides the basis for further examination in the final results section. These results are shown in Table 3.

The External Impacts of Student Assessment on *Allocation or Share of State Funding*, (Table 3) provides the best overall discriminant function. This is corroborated by the lowest Wilks' lambda (.829) and the highest eigenvalue (.207). Additionally, the function at the group centoid shows the largest difference between groups (.761 and -.271) on the 1 to –1 continuum. Since private institutions rarely, if ever, receive state funding, this analysis was run using only public institutions. Another indicator of the relative strength of this function is the number of discriminating variables that emerge from the five domains; there are 12 discriminating variables that significantly contribute to the overall function and at least one from each of the five domains. The strongest of the discriminating variables, as one might expect for this external impact, is *state initiative* (.407). Two other relatively strong discriminating variables include *institutional type* (.381) and *state purposes* (.324). There are two variables in this function for which the influence is negative, *accrediting influence* and *external methods*.

One might expect that the variables *state initiative* and *state purposes*, would be useful in discriminating between institutions that monitor the external impact on *allocation or share of state funding* and those that do not. Institutions with these state influences and purposes for collecting student assessment information would be expected to monitor the impact of that

**Table 3.** Results of Discriminant Analysis Showing Standardized Discriminant Coefficients[1]

| | External Impacts | | | | | | |
|---|---|---|---|---|---|---|---|
| | Student Application or Acceptance Rates | Allocation or Share of State Funding[2] | Evaluation from Regional Accrediting Agency | Private Fund-Raising Results | Success on Grant Applica-tions | Commun-ications with External Constit-uents | Institu-tional Reputation or Image |
| **Eigenvalue** | **.092** | **.207** | **.114** | **.091** | **.102** | **.151** | **.182** |
| **Wilks Lambda** | .915*** | .829*** | .897*** | .917*** | .907*** | .869*** | .846*** |
| **Functions At Group Centroids** | | | | | | | |
| Do Not Monitor (.00) | -.149 | -.271 | -.384 | -.131 | -.181 | -.236 | -.307 |
| Monitor (1.00) | .618 | .761 | .298 | .692 | .566 | .639 | .593 |
| **External Influences** | | | | | | | |
| Accrediting Influence | | -.202 | .222 | | -.275 | | |
| State Initiative | | .407 | | | | .220 | |
| State Approach | | | | | | | |
| State Authority | | | | | | | .167 |
| **Institutional Context** | | | | | | | |
| Institutional Type | | .381 | | | | | |
| **Institutional Approach** | | | | | | | |
| Academic Intentions | | | | | .226 | | |
| Cognitive Assessment | | | | | | | |
| Affective Assessment | | | | | | | |
| Post-college Assessment | | | | | | | |
| Comprehensiveness of Data Collection | .213 | | .344 | | | | .176 |
| Number of Instruments | | .242 | | | | .260 | .245 |
| External Methods | | -.212 | | | | | |
| Student Methods | | | | .401 | | | |
| Number of Studies | .502 | .235 | | .406 | .391 | .466 | .253 |
| Number of Reports | | .206 | .268 | | | | |
| **Institution-wide Support** | | | | | | | |
| Mission Emphasis | .379 | | | .218 | | | |
| Internal Purposes | | | | | | | |
| Accreditation Purposes | | | | | | | |
| State Purpose | | .324 | | | | | |
| Administrative and Faculty Support | | .214 | | | | | |
| Breadth of Assessment Planning Group | | | | | | | |
| Number Approving Changes | .250 | .188 | | | | | |
| **Management Policies and Practices** | | | | | | | |
| Access to Information | | .186 | | .213 | .249 | | |
| Distribution of Reports | | | | .254 | | .199 | .273 |
| Student Involvement | | | .388 | | | .250 | |
| Professional Development | | | | | | | .170 |
| Student Affairs | .210 | .229 | | | .318 | | |
| Faculty Evaluation | .259 | | .268 | .339 | .223 | .251 | .271 |
| Academic Planning and Review | | | .321 | | .316 | .275 | .340 |

Notes: 1. All coefficients shown are significant at $p \leq .001$. 2. Analysis includes only public institutions.
*** $p \leq .001$



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student assessment information. The contribution of *institutional type* would also be expected after examining the results of monitoring this impact by *institutional type* discussed in the previous section. These results generally show that as *institutional type* increases from associate of arts to research, institutional monitoring of external impacts increases. Of the two variables which negatively influence the discriminant function, *accrediting influence* might intuitively be expected since state funding and accreditation evaluation are generally viewed as separate and likely to have opposite effects in terms of monitoring influence. The negative influence of the variable *external methods*, a factor variable which consists of items relating to employer interviews and alumni interviews, shows that institutions using these type of student assessment methods are less likely to monitor external impacts of state funding. It is not clear why this might be the case, but perhaps *external methods* are used more frequently by private institutions who do not monitor the external impact on *allocation or share of state funding*.

*Institutional Reputation or Image* (Table 3) is the external impact of student assessment that provides the second strongest discriminant function. The relative strength of the Wilks' lambda (.846) and eigenvalue (.182) confirm this. The function at the group centroid (.593 and -.307), once again, significantly differentiates between the group that monitors versus the group that does not monitor. This function has eight discriminating variables that emerge from three of the five domains: external influences, institutional approach, and assessment management policies and practices. The two domains that do not contribute to the function are institutional context and institution-wide support.

The strongest discriminating variable is *academic planning and review* (.340). This might be expected since institutions are likely to make programmatic changes in order to enhance their reputation or image. *Distribution of reports* is the second strongest discriminating variable. This

might be expected if institutions increase the distribution of student assessment information with the expectation that the distribution of this information will positively effect the institutions reputation or image. The third strongest discriminating variable is *faculty evaluation.* It is not immediately clear why this variable may influence the monitoring practices of institutions with regard to this external impact. Perhaps public institutions, which monitor this external impact more than private institutions, are more likely to use student assessment information in the faculty evaluation process. Additionally, institutions that use assessment information for faculty evaluation purposes, may expect that improved faculty evaluation processes will impact *institutional image or reputation.*

*Communications with External Constituents* (Table 3) is the impact of student assessment that provides the third strongest discriminant function, confirmed by the relative strength of the Wilks' lambda (.869) and eigenvalue (.151). The function at the group centroid (.639 and -.236), also provide the third largest differentiation between groups. This function has seven discriminating variables which like the previous impact, emerge from only three of the five domains: external influences, institutional approach, and assessment management policies and practices. Again, the two domains that do not contribute to the function are institutional context and institution-wide support.

The strongest discriminating variable is *number of studies* (.466). This perhaps makes intuitive sense that the more studies an institution undertakes, the more likely to report to external constituents and thus monitor the impacts of these communications. The second strongest discriminating variable is *academic planning and review,* which might be explained by institutions desire to communicate curricular and programmatic changes to external constituents and then monitor the subsequent impacts.' The third strongest discriminating variable is *number*

*of instruments*. A logical explanation of this might be that the more instruments an institution uses the more student assessment information that is collected and thus the more likely to be communicated to external constituents.

The Impact of Student Assessment on *Evaluation from Regional Accrediting Agency* (Table 3) provides the next best discriminant function. The relative strength of this function is corroborated by the Wilks' lambda (.897) and the eigenvalue (.114). The function at the group centoid, however, shows the smallest difference between groups (.298 and -.384). This does not necessarily mean that the function is not good, but rather implies that there is not as great a difference between institutions that monitor this external impact versus those that do not. In this function there are only six discriminating variables that emerge from three of the five domains. Once again, the domains that are represented here include: external influences, institutional approach, and assessment management policies and practices.

The strongest discriminating variable is *student involvement* (.388). This seems logical since accrediting agencies like to see student involvement in institutional processes. Two other variables that are nearly as strong are *comprehensiveness of data collection* (.344), and *academic planning and review* (.321). These both makes sense since accrediting agencies are generally positively influenced by more comprehensive student assessment efforts and since feedback from accrediting agencies often call for curricular or programmatic changes that effect academic planning and review.

*Success of Grant Applications* (Table 3)provides the fifth strongest discriminant function of the seven external impacts of student assessment. The relative strength of the Wilks' lambda (.907) and eigenvalue (.102) confirm this. The function at the group centroid (.566 and -.181), once again, significantly differentiates between the group that monitors versus the group that

does not monitor. This function has seven discriminating variables that emerge from three of the five domains: external influences, institutional approach, and assessment management policies and practices. Again, the two domains that do not contribute to the function are institutional context and institution-wide support.

The strongest discriminating variable is *number of studies* (.391). This variable, an additive index of the types of student assessment studies performed, would likely effect the monitoring of grant success, since the more studies an institution does the broader the scope of the information collected and the more likely it is to be used in grant applications. The second and third strongest discriminating variables are *student affairs* and *academic planning and review*, respectively. Similarly, these variables are likely to be influential in the overall discriminant function for this impact because certain grant application may ask for information that relates to student affairs function and the academic planning and review process.

There is one discriminating variable in this function that contributes negatively to the function, *accrediting influence* (-275). This indicates that the more emphasis an institution places on the accrediting influence, the less likely it is to monitor the impact of *success on grant applications*. This may indicate that institutions that collect student assessment information mainly for accrediting purposes, are less likely to monitor the impact of that information on grant applications.

*Student Application or Acceptance Rates* (Table 3) is the external impact of student assessment that provides the next to weakest discriminant function among the seven. The relative strength of this function is corroborated by the Wilks' lambda (.915) and the eigenvalue (.092). The function at the group centoid (.618 and -.149) significantly differentiates between the group that monitors versus the group that does not. In this function there are six

discriminating variables that emerge from three of the five domains. The domains that are represented, however, are different and include: institutional approach, institution-wide support, and assessment management policies and practices.

The strongest discriminating variable is *number of studies* (.502) which is the strongest influence of any of the discriminating variables for any of seven functions of the external impacts. This may suggest that institutions, which perform a number of different student assessment studies, are interested in increasing *student application or acceptance rates* and monitor this area in relation to the information they collect or the changes that they make as a result of the information they collect. One other variable that has a relatively strong influence is *mission emphasis* (.379). This is logical since institutions, which mention or emphasize student assessment in their mission, are likely to be interested in all aspects of student assessment information including the impact on *student application or acceptance rates*.

*Private Fund-raising Results*, (Table 3) the external impact of student assessment variable that provides the weakest discriminant function, is confirmed by the relatively lower strength of the Wilks' lambda (.917) and eigenvalue (.091) compared to the other six. The function at the group centroid, however, does provide the fourth largest differentiation between groups (.692 and -.131). This function also has six discriminating variables which like the previous impact, emerge from three of the five domains: institutional approach, institution-wide support, and assessment management policies and practices. Again, the two domains that do not contribute to this function are external influence and institutional context.

The two strongest discriminating variables, very close in their relative influence in the function, are *number of studies* (.406) and *student methods* (.401). These two variables probably have a strong influence in the overall discriminant function since private fund-raising methods

are likely to include an emphasis to donors on the number and type of approaches to student assessment that the institution undertakes.

Influential Discriminating Variables

Having examined individually the variables discriminating among the seven external impacts, we now turn our attention toward an analysis of the five conceptual domains and individual variables, which contribute to the various discriminant functions. This will allow us to address more broadly our second research question: "How do institutions' external influences on, institutional approaches to, institution-wide support for, and patterns of assessment management policies and practices for student assessment relate to the external impacts of student assessment information they monitor?". We will do this by looking at which variables were influential across the seven external impacts.

External Influences. Within the domain of external influences there were four possible discriminating variables: *accreditation influence, state initiative, state approach,* and *state authority* (Table 3). Of these, *state approach* did not emerge as a discriminating variable for any of the seven external impacts of student assessment. This suggests that regardless of the types of indicators or outcomes a state may mandate, it has no influence on the likelihood of an institution to monitor its external impacts of student assessment information. *State initiative* had a positive influence for two of the external impacts, *allocation or share of state funding* and *communication with external constituents*. The fourth variable, *state authority,* only emerged for one external impact, *institutional reputation or image*, and with a weak influence. *Accrediting influence*, however, emerged in three of the seven impacts: *allocation or share of state funding, evaluation from regional accrediting agency,* and *success on grant applications*. Interestingly, though in two of those functions, *allocation or share of state funding* and *success on grant*

*applications,* it had a negative influence in the overall function. The likely reasons for this were previously discussed in the sections for each of these external impacts.

The lack of number and pattern of state influences on the monitoring of external impacts of student assessment information may suggest that, apart from the monitoring of state funding, external influences from the state are not likely to provide much differentiating ability for distinguishing between institutions that monitor external impacts and those that do not. Conversely, external influences from accrediting agencies are likely to be useful in differentiating between institutions that monitor and those that do not.

Institutional Context (Table 3). This domain has only one variable, *institutional type*, which was included in the discriminant analysis. *Institutional control* was not included in the analysis since it was a dichotomous (not continuous as required by discriminant analysis) variable. Though there are differences by *institutional type* in whether or not institutions monitor external impacts for three of the external impacts, *student application or acceptance rates, allocation or share of state funding,* and *private fund-raising results*, this variable only emerges as a significant discriminating variable for one of the seven external impacts, *allocation or share of state funding*. It does, however, have a relatively strong influence in the discriminant function of this external impact which suggests (as previously mentioned) that as *institutional type* varies from associate of arts to research, the institution is more likely to monitor the external impact of *allocation or share of state funding*.

Institutional Approach. The domain of institutional approach is one of two domains that contribute a number of significant discriminating variables (Table 3). Of the ten approach variables used in the analysis, only three did not contribute any discriminating influence: *cognitive assessment, affective assessment,* and *post-college assessment*. Of the seven that were

influential, there were three variables that were influential in three or more of the discriminating functions for the external impacts: *comprehensiveness of data collection, number of instruments,* and *number of studies*. The *number of studies* was the most influential variable in discriminating between institutions that monitor and those that do not, contributing a strong influence to six of the seven discriminant functions.

The large number of variables in this section that emerged as influential across a number of external impacts suggests that the institutional approaches to student assessment, particularly in the areas of the number of studies, comprehensiveness of data collection and number of instruments, is useful in differentiating between institutions that monitor their external impacts and those that do not.

Institution-wide Support. This domain, with seven variables used in the analysis, did not contribute any variable to a great extent (Table 3). Two of the variables, *mission emphasis* and *number approving changes* were influential in two of the discriminant functions: *student application or acceptance rates* and *private fund-raising results* (for *mission emphasis*) and *student application or acceptance rates* and *allocation or share of state funding* (for *number approving changes*). Overall, institution-wide support does not appear to be an area that differentiates between institutions that monitor external impacts and those that do not.

Assessment Management Policies and Practices. The final domain of assessment management policies and practices appears to be the best domain for differentiating between institutions that monitor external impacts and those that do not. All seven variables in this conceptual domain contribute some influence to the discriminant functions for all seven external impacts (Table 3). Five of the seven contributed to three or more of the discriminating functions. *Faculty evaluation* contributed to six of the seven external impact functions and *academic*

domains and dimensions of student assessment can be used to differentiate institutions with regard to the practice of monitoring.

The descriptive results from this study were useful in addressing our first research question. The overall monitoring pattern of institutions is relatively low for all but one of the external impacts. Fewer than one-third of all institutions monitor the external impacts of their student assessment information with the exception being the external impact on *evaluation from regional accrediting agency*, where just over half of the institutions reported monitoring this external impact. There were differences in monitoring patterns that emerged based on the *institutional type* for three of the seven external impacts: *student application or acceptance rates, allocation or share of state funding,* and *private fund-raising results*. Additionally, differences also emerged based on *institutional control*. There were monitoring differences between public and private institutions for three of the seven external impacts: *allocation or share of state funding, private fund-raising results,* and *institutional reputation or image*.

The discriminant analysis also proved useful in helping us address our second research question. We were able to identify which of the five conceptual domains are useful in differentiating between institutions that monitor external impacts of student assessment information and those that do not. Furthermore, the discriminant analysis helped in identifying specific dimensions within the conceptual domains that can be used to further differentiate between monitoring and non-monitoring institutions.

Two of the five domains stand out as being very useful in differentiating between groups: institutional approach to student assessment and student assessment management policies and practices. These two domains contribute a number of variables to the discriminant functions of

*planning and review* contributing to four of the seven functions. They share four of the functions: *evaluation from regional accrediting agency, success on grant applications, communication with external constituents,* and *institutional reputation or image*. This may indicate a connection between the use of student assessment in *faculty evaluation* and for *academic planning and review*.

It is clear that this domain is quite useful in differentiating between institutions that monitor their external impacts and those that do not. The use of student assessment information in faculty evaluation and for academic planning and review tend to be the most useful. Interestingly enough, however, previous studies (Peterson et al, 1999) have shown that institutions are least likely to use student assessment information in faculty evaluation in order to promote faculty involvement in student assessment

## Discussion and Implications

The goal of this study is to help assess the extent to which institutions monitor the external impacts of student assessment information and to identify institutional domains and dimensions of activities supporting student assessment that will help institutions improve their assessment efforts. As a first step, it is helpful to know which of these domains and dimensions are actually used to help differentiate between institutions that are involved in monitoring certain impacts from student assessment data. While this study does not attempt to show a causal relationship between institutions that are involved in various assessment support practices and those that monitor external impacts, it does give insight into factors that can help differentiate between institutions that are involved (and possibly concerned with) the external impacts of their assessment information. Clearly this study has contributed to a better understanding of which

Interestingly, these findings (significant influence of institutional approaches and assessment management policies and practices and little influence of external influences, institutional context, and institution-wide support on monitoring the impacts of student assessment information) may coincide with a related paper on this topic. Peterson and Augustine (2000, forthcoming) find external influence, institutional context, and institution-wide support variables strongly related to the amount or extent of student assessment in which an institution is engaged. This suggests variables in these domains may be influential in getting an institution to initiate student assessment, but that approach and assessment management policies and practices are influential in fostering use and monitoring of the impacts of student assessment data.

Future studies may wish to examine more intensively the nature of external impacts that result from the use of student assessment information and the quality of assessment efforts at the institutional level. It is clear from the literature that this is an area that has not been examined to any large degree. If the goal in this era of increased scrutiny is to improve institutional performance as well as student assessment activities, gaining a better understanding of assessment activities that help institutions improve their external impacts should be a high priority. Studies such as this and others can go along way toward achieving that goal.

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43

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